University of Alberta

Four Recitals and an Essay:
From Violin to Viola:
A Discovery in Sound and Technique

by

Aaron Jonathan Au

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ABSTRACT

From Violin to Viola: A Discovery in Sound and Technique

by

Aaron Jonathan Au

The viola is a fundamentally different instrument than the violin. Its unique acoustic and physical properties have important implications in areas of sound awareness and technique. Unfortunately, many of the violinists who make the transition to the viola are unaware of these differences, treating the viola as a large violin. Consequently, these musicians do not realize their full potential on the larger instrument, especially in the area of tone production.

This thesis addresses this issue in four main sections. The first section examines the current state of viola pedagogy regarding students transitioning from violin to viola. The second section looks at the acoustic and physical differences between the violin and viola and places these differences in the context of tone production and sound awareness on the viola. The third section explores adjustments to violin technique in the right and left hand, which help the student increase efficiency and maximize sound potential on the viola. Because of the subtlety of many of these adjustments, it is important for most new violists to be able to compare and illustrate the differences between the sound and technique of the two instruments in a musical context. The fourth section uses excerpts from Mozart's Sinfonia Concertante in Eb, KV 364 to provide this context and illustrate these differences.

PREFACE

The genesis of this thesis is my personal experience in making the transition from violin to viola.

I began playing the violin at the age of four. When I was twelve, a local instructor formed a string quartet of students and I was selected as the violist, never having played the instrument before. Thus began my journey of discovery with the viola.

At the same time, I continued my studies on the violin, learning the viola as a secondary instrument. In fact, I did not receive any specialized instruction on the viola and continued to learn it and approach it as a big violin. It was not until almost ten years later that I learned that this approach was inadequate.

Thomas Riebl, one of Europe's leading violists and my instructor at the Universität Mozarteum Salzburg (in 1998 – 1999), told me that by approaching the viola as a big violin, I was not realizing the instrument's full potential, especially in the area of sound. I took his advice to heart, and subsequently spent the next few months discovering what the full potential of the viola sound could be and what technical adjustments were required in order to achieve that sound.

After completing my studies at the Mozarteum in 1999, I began my professional music career, which included teaching viola as a sessional lecturer at the University of Alberta in Edmonton, Alberta. I also taught viola at various Canadian summer institutes and soon discovered that many of my students had issues very similar to my own experience. Most of these violists were not realizing the full sound potential of their instrument. I wanted to know how prevalent this phenomenon was among violists and what could be done about it. Herein lay the impetus for my research on this topic.

ACKNOWLEDGEMENTS

I would like to thank my supervisors Tanya Prochazka and Guillaume Tardif for their tireless efforts in advising me in this project. I would also like to thank Thomas Riebl, not only for opening my eyes and ears to the viola's sound potential, but also for agreeing to be interviewed for this essay. Yehonatan Berick, violin and viola professor at the University of Michigan, has also been a great help in developing my awareness of sound. Canadian luthier John Newton was instrumental in helping me develop an understanding of how the physics of the viola influence the sound and tone production.

Finally, I would like to thank my many alto-clef colleagues who took the time to share their experiences transferring from violin to viola by completing the survey I devised to compile data for this thesis. Not only did their input help me to understand the current state of violin to viola transitional pedagogy, it gave me insight into areas where my research will be beneficial.

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INTRODUCTION

The majority of violinists learning the viola do not adequately understand the differences between the two instruments. Many of them approach the viola as a larger version of the violin and consequently do not realize the full potential of the instrument, especially in the area of sound. They also are not aware of the many subtle adjustments that can be made to violin technique which generate a distinctive and full viola sound with efficiency of effort.

When setting out to research this problem, I decided to approach the issue from three angles. The first was to design and distribute a survey, which would help me document the experiences of violinists making the transition to viola. The second was to interview and observe the teachings of some of today's leading viola pedagogues, including Thomas Riebl from the Universität Mozarteum Salzburg and Karen Tuttle from the Juilliard School. The third approach was to examine the available literature on viola pedagogy with specific emphasis on materials dealing with the transition from the violin to the viola. My research led me to organize this essay around four objectives, described in four chapters.

Chapter 1 examines the current state of viola pedagogy regarding students transitioning from violin to viola. Using data collected from the survey and information gathered from respected viola pedagogues, it shows the prevalence of students not realizing their full sound potential on the viola. This first chapter appraises viola pedagogy in both an historical and a modern context with an emphasis on transitional pedagogy.

Chapter 2 establishes criteria for what constitutes a fully realized viola sound by examining the implications of the viola's unique physical and acoustic properties and cross-referencing these results with how viola pedagogues describe a fully realized viola

sound. This chapter also explores the ways in which a student can develop an awareness of such a sound.

Chapter 3 offers practical technical adjustments that can be made to violin technique in order to generate this fuller sound with efficiency. It also discusses the two main learning types of students transferring from violin to viola.

Chapter 4 uses excerpts from the Sinfonia Concertante, KV 364 of Wolfgang Amadeus Mozart to provide a musical context for the practical application of sound awareness and adjusted technique.

Susanna Garcia, in her article titled "Learning Styles and Piano Teaching" (2002), refers to three "modalities" of learning: Visual, Auditory and Tactile/Kinesthetic. This essay will address all three learning modalities. The concepts of viola acoustics and sound, discussed mainly in Chapter 2, will appeal to visual or conceptual learners while auditory and tactile learners will benefit from the comparison between the violin and viola parts selected from the Mozart. While emphasis can be placed on certain aspects of this thesis based on the reader's dominant modality, the thesis is designed to be approached as a whole.

CHAPTER 1: UNREALIZED POTENTIAL

1.1 SURVEY

I began research on my thesis with the following assumption: Violinists transitioning to the viola are often not aware of the essential differences between instruments and consequently do not play the viola at its full potential.

The goal of the survey, which I designed for this thesis, was to determine the truth of this assumption. I wanted to examine in particular the state of viola pedagogy, especially as it pertains to students transitioning from violin to viola.[1]

My sample group included over one hundred violists from Europe, the United States and Canada. The respondents represent a broad sampling of age groups, musical backgrounds and expertise levels — some are amateur musicians while others have established professional careers as viola teachers and performers.

1.1.1 Survey Results

The survey showed that four out of five violists began their string training on the violin. They made the transition to the viola for many different reasons and at different stages in their musical education.[2] The most frequent reasons people indicated for learning the viola included an affinity for the sound, and employment or musical opportunities with an orchestra or ensemble.

Another result of the survey was that many respondents were not taught what a good viola sound was or the differences in technique, which would encourage a good sound on the viola. They approached the viola as a large violin. 51% of survey

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[1] A copy of the survey can be found in Appendix 1.

[2] Respondents spent an average of 11.4 years playing the violin before learning the viola.

respondents felt that they had mediocre to inadequate instruction when making the transition from violin to viola. Most comments seem to point to the fact that teachers (who were violinists teaching viola) did not make detailed references to the differences between the instruments. When asked what their teachers pointed out as the differences in bow technique, the second most frequent response was that they were taught little or no difference. What might account for these responses?

1.2 VIOLA PEDAGOGY HISTORY

An ignorance rooted in tradition seems to be a plausible explanation. To understand this, it is useful to examine the history of viola pedagogy. In the Baroque era it would seem that violists were first and foremost violinists. Author Judy Tarling points to what was probably the established practice of the time:

> As the viola may be regarded as a large violin, played with basically the same technique, it is likely that most violinists would have played the viola as a matter of course, as and when they were required to do so.[3]

Many violinists who played viola were not very skilled on the violin, and it seems the more talented violinists could not be persuaded to play the viola. Johann Joachim Quantz (1697-1773), a respected Baroque musician and composer, observed:

> The viola is commonly regarded as of little importance in the musical establishment. The reason may well be that it is often played by persons who are either still beginners in the ensemble or have no particular gifts with which to distinguish themselves on the violin, or that the instrument yields all too few advantages to its players, so that able people are not easily persuaded to take it up.[4]

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[3] Judy Tarling, *Baroque String Playing for Ingenious Learner,* 2d ed. (Hertfordshire: Corda Music publications, 2001), 230.

[4] As quoted in Ibid., 229.

Quantz does not specify what the "too few advantages" are, but in an era where the violin was emerging as a virtuosic, solo instrument, the viola, with its subservient inner voice role, remained in the violin's shadow. This is apparent by the "sorry state of the viola repertoire in the mid-18th century."[5] Bach's Sixth *Brandenburg* Concerto, BWV 1051 and Telemann's G Major Concerto are the only two works of significance featuring the viola from this period.[6]

Equally as significant is the dearth of technique books or instructional methods for the viola from this period. Violists had no resources of their own to study. By comparison, several method books written for violinists were printed as early as the beginning of the 18th century and on with the important treatises of Michel Corrette (1741), Francesco Geminiani (1751), Leopold Mozart (1756), and L'Abbé le fils (1761), to name a few. Viola historian Maurice Riley explains the contrast:

> The publication of an instruction book for an instrument results from a need, and the existence of a potential market for the sale of the book. In Germany several publications in the late 17th and the early 18th centuries furnished meager details for performing on the viola. The German books usually gave the tunings for the *alto* and the *tenor* and implied that they were played like the violin…They were not in any sense actual instruction books for the viola.[7]

Violists would have to wait until 1782 to receive their first treatise on the viola, *Méthode d'Alto* by Michel Corrette. As viola parts gained more prominence in opera scores, symphonic works and string quartets through the eighteenth and nineteenth centuries, more viola methods began to appear such as those by Bartolomeo Bruni (1805), Franz Anton Hoffmeister (c. 1800) and Bartolomeo Campagnoli (c. 1805). But many of these methods were not well known or readily available, and all of these

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[5] Tarling, *Baroque String Playing*, 230.

[6] Ibid.

[7] Maurice Riley, *The History of the Viola*, Vol 1, 2d ed., rev. (Ann Arbor: Braun-Brumfeld, 1993), 167.

methods addressed the viola in a very similar manner to the violin. Little to no reference was made to the differences between violin and viola; any comments made usually had to do with the tuning of the viola strings or reading of the alto clef.[8] Riley points to the fact that the majority of viola teaching in the 19th century was done by violinists who transposed studies by Rudolphe Kreutzer, Jacques Féréol Mazas and others to the viola. Even the Paris Conservatoire treated the viola as nothing more than a secondary study instrument, a point that Hector Berlioz (1803-1869) decried in the mid-19th century:

> It is to be regretted that there is no special class for the Viola. This instrument, notwithstanding its relation to the violin, needs individual study and constant practice if it is to be properly played. It is an antique, absurd, and deplorable prejudice that has hitherto handed over the performance of the tenor part to second- or third-rate violinists. Whenever a violinist is mediocre, it is said, "He will make a capital tenor." From the stand-point of modern music this is false reasoning for trashy parts are no longer written for the orchestra (at least by the great masters)…and a condition of inferiority in one part with regard to any other is not recognised.[9]

In 1894, the Conservatoire finally established the viola as a major instrument and soon after, the Eastman School of Music in Rochester, New York and the Curtis Institute for Music in Philadelphia, Pennsylvania, followed suit. It wasn't until after World War II, however, that other schools across the United States and Europe began to establish the viola as a major instrument and employ viola teachers "who were conversant with the performance problems peculiar to the instrument."[10]

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[8] Of course, that does not mean these etudes are not valuable as pedagogical tools. However, in order for them to be effective in aiding the violinist with the transition to the viola, these studies must be used in a directed manner with the teacher pointing out what must be achieved.

[9] As quoted in Riley, *The History of the Viola*, 184.

[10] Ibid., 185. When the viola began making inroads in educational institutions as a major instrument in the early 20th century, the idea of the viola as a solo instrument started gaining popularity under the pioneering influence of Lionel Tertis and later, viola virtuoso William Primrose. Through their tireless efforts promoting the viola and their consistently high standards in performances as well as in commissioning new works, the viola began to establish its own identity apart from the violin.

In this historic context, it is easy to see that in the past the viola was thought of as nothing more than a large violin or a secondary instrument. The survey results point to this mindset continuing today.

1.3 MODERN VIOLA PEDAGOGY

Part of the problem seems to be that even though specialized instruction on the viola is now more readily available than it was historically, that instruction is not always accessed. Thirty-four percent of the survey respondents indicated that they remained with their violin teacher while they learned the viola; another eighteen percent said that they taught themselves the viola. Responses showed that they did not learn the differences between violin and viola because their teachers (or they themselves in the cases of self-study) did not know the differences.

To be fair, the data does point to areas of recent improvement in increasing awareness of the differences between violin and viola. The survey data discussed above shows pedagogical trends at the time when most survey respondents were making the transition.[11] Where the improvement appears is in how survey respondents answered when asked how they currently understand and teach the differences between violin and viola. There are signs indicating that they are more cognizant of a different approach to viola sound and technique than their teachers were.[12]

What accounts for this improvement? Certainly the development of viola pedagogy since the early 20th century would be one reason. Performers and pedagogues who specialized on the viola, such as William Primrose (1904-1982) and Karen Tuttle (b.

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[11] The average period of time respondents have been playing the viola is 16 years.

[12] For instance, when asked if they now understand the differences in right hand technique between violin and viola, the 6th most frequent response was that there are no differences. This result is down from the 2nd most frequent response when asked about their learning experience on the viola.

1920), now have students on faculty at musical institutions throughout the world teaching the viola as a major instrument.[13] Several violists who responded to the survey indicated that they sought out and completed further studies with viola specialists after making the initial transition from violin to viola.

There has also been a modest increase in transitional specific methods and literature. Heinrich Klingenfeld's *Violaschool for Violinplayers* from 1897 is the first published method explicitly intended for violin players learning the viola. Other methods include Paul Harvey Whistler's *From Violin to Viola: A Transitional Method* published in 1947 and Paul Bleier's *Kurzlehrgang des Viola-spiels für Geiger* (A Short-course of Viola Playing for Violinists) from 1953. Articles on the subject have been written by Juliet White-Smith, professor of viola at the University of Colorado, Roland Vamos, distinguished professor at Northwestern University, and David Wallace, a graduate viola student at the Mannes College of Music.[14]

1.4 TRANSITIONAL RESOURCES

Each of the above-mentioned resources have certain pedagogical strengths and weaknesses and are helpful to varying degrees in bringing awareness of the differences between violin and viola sound concepts and technical approaches. Perhaps the most useful resource is White-Smith's article. She offers helpful information on set-up issues on the viola, practical advice for developing a concept of viola sound and basic exercises to help develop tone production on the viola. Her article also provides references to some

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[13] Karen Tuttle's "Coordination" approach to learning the viola, for instance, is being passed down in numerous musical institutions in the United States where her students are now professors. For more information, see Dane.

[14] While there are a few other resources available, five of these six were chosen because of their accessibility and availability. The Bleier was received upon request from a German violist but is not available in North America or in English.

other useful resources. Wallace's article is also informative and offers some very concise descriptions about viola specific technique but no practical exercises or examples are offered. Vamos' article may be the least useful at pointing out the differences between violin and viola since Vamos himself claims that for him, it "was not a terribly hard transition because the techniques for the viola and violin are virtually the same".[15] Consequently the article has brief and basic discussions focusing on clef reading, left hand position, vibrato and some tone production issues.

The methods are not as detailed in their descriptions of the sound concept and technical differences between violin and viola. Bleier's method is designed to facilitate a quick transition for a violinist wishing to play viola in a novice to moderate string quartet or orchestra. It does not explicitly deal with any differences between violin and viola sound or technique. Whistler's method is quite rudimentary in most of the exercises and examples offered and his exploration of viola sound and technique is also very basic. Klingenfeld's method is limited in its usefulness as it mostly focuses on clef reading and scales.

1.5 DEVELOPING SOUND AWARENESS IN A MUSICAL CONTEXT

What these resources lack are clear guidelines as to what constitutes a good viola sound. While developing a sound concept on the viola may be the result of personal choices based on esthetic preferences, there are certain tonal qualities which should be accounted for based upon the unique physical and acoustic properties of the instrument. These resources also lack a musical context where directed comparisons between violin and viola can be made.

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[15] Roland Vamos, "From Violin to Viola". in *Playing and Teaching the Viola: A Comprehensive Guide to the Central Clef Instrument and its Music*, ed. Gregory Barnes (Virginia: American String Teachers Association, 2005), 177.

My essay is the first transitional resource to establish criteria for what constitutes a fully realized viola sound based upon objective physical/acoustic factors and corresponding subjective qualities as described by leading viola teachers and performers (see Chapter 2). Additionally, my thesis examines how Mozart's Sinfonia Concertante, KV 364 can provide a musical context for directed aural and tactile comparison between the violin and viola, further raising awareness of the technical adjustments which must be made in order to achieve a true viola sound.

CHAPTER 2: TOWARDS AN UNDERSTANDING OF VIOLA SOUND

When asked what he perceived to be the most important difference between playing the violin and viola, Yehonatan Berick, professor of violin at the University of Michigan and a wonderful violist as well, stated that "being aware of the sound" was the most crucial element.[16] Thomas Riebl, one of Europe's leading violists, echoes this sentiment saying that, when playing the viola, there must be an "enormous awareness of sound".[17]

The Oxford English Dictionary defines the state of being aware as:

> Watchful, vigilant, cautious, on one's guard
> Informed, cognizant, conscious, sensible[18]

According to this definition, it is important for the new violist to be watchful or attentive to the sound they are producing. It is equally important for her to have the knowledge of what constitutes a good and distinctive viola sound and to ensure that what she hears matches that knowledge. In other words, in order to realize the full potential of viola sound, violists must know what they are listening for. So what qualities of sound should the transitioning violinist be aware of in her viola sound?

Based on research into the unique physical and acoustic properties of the viola as well as esthetic considerations promoted by leading viola performers and teachers, I have identified three main areas of sound awareness: character, focus and clarity.

2.1 CHARACTER

William Primrose, one of the 20th century's most respected violists and musical figures, noted "the number of violinists today who appear to believe that all they have to

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[16] Yehonatan Berick, interview, 20 June 2006.

[17] Thomas Riebl, public lesson, 13 August 2006.

[18] Oxford English Dictionary Online, s.v. "Aware."

do is to possess themselves of a viola, and play away on it to their heart's content and my distress, not realizing for a moment that all that is happening is that they are performing on what I am prompted to call the 'big fiddle', denying it (the viola, that is) its uniqueness, its quiddity."[19]

Karen Tuttle, one of America's most influential viola pedagogues, stresses the importance of the performer recognizing and "preserving the integrity" of the viola's unique character and quality apart from the violin.[20]

In order to understand what constitutes a distinct viola sound character, it is helpful to examine how the physical and acoustic properties of the viola differ from the violin and to appreciate the important implications these differences have on the viola sound. The two factors that I determined affect the viola's sound character the most are its size and the thickness of its wooden plates.

2.1.1 Size

It is obvious that the viola is larger than the violin. The reason for the viola's larger size has to do with its range. The viola is tuned a fifth lower than the violin. Its lowest string, the C-string has a wavelength (C3 = 130 Hz), which is 1.5 times longer than the frequency of the violin's lowest string, the G-string (G3 = 196 Hz).[21] If the viola were to possess the same acoustical characteristics as the violin, it would also, theoretically, have a body length 1.5 times longer than that of a violin. The generally accepted body length for a violin is approximately 14 inches or 355mm; consequently a proportionally scaled

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[19] Yehudi Menuhin and William Primrose, *Violin and Viola* (New York: Schirmer Books, 1976), 173.

[20] Matthew Dane, "Coordinated Effort: A Study of Karen Tuttle's Influence on Modern Viola Teaching," D.M.A. dissertation (Rice University, 2002), 22.

[21] Frequencies and note nomenclature are based on the "American Standard Pitch" where A4=440 Hz. For more information, refer to http://www.physlink.com/Education/AskExperts/ae165.cfm.

viola should have a body length of 21 inches (538mm).[22] However, a viola of this size is virtually unplayable by virtue of its size and weight. Luthiers have compromised by scaling down the viola to more playable dimensions, ranging from 15 to 17 inches in length. This means that violas are only 1.07 – 1.2 times larger than the violin. The proportionally smaller size of the viola, relative to its lowest radiating frequency has several implications for the acoustic properties of the instrument. To understand these implications, we must first examine how the instrument vibrates.

2.1.1.1 Resonances

The wood of the viola vibrates at different strengths when different pitches are played. At certain pitches, the vibration of the string matches the frequency at which the wood vibrates naturally and the body of the instrument responds by oscillating at high amplitude. This phenomenon, known as resonance, also occurs in the air cavity between the top and bottom plates of the instrument. The pitches or frequencies that generate these strong responses in the wood are known as wood resonances; those which affect the air cavity are known as air resonances. The main wood resonance (MWR) and the main air resonance (MAR) correspond with the lowest resonating frequencies of the wood and air column.

The relationship between the MAR and MWR is extremely important to the sound, character and quality of the instrument. On a good violin, the MAR and MWR are spaced approximately a perfect fifth apart with the MAR occurring on the C or C# on the G-string and the MWR located at the G or G# on the D-string. These resonances serve to reinforce the sound of the violin because they are situated so near to the two open middle

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[22] For more information on the Laws of Similarity, which determine these measurements, see Cremer, 350-356.

strings. This accounts for the brilliant, projecting qualities and the evenness of tone through the various registers on good violins.[23]

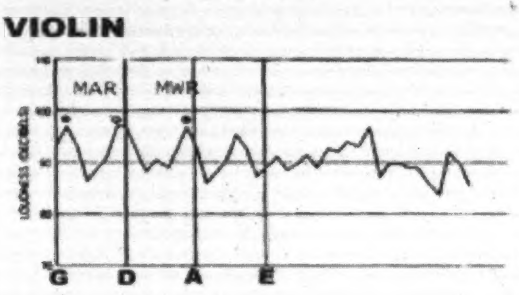

Figure 1 – Violin loudness curve showing relationship of MAR and MWR relative to open strings[24]

If the viola were scaled proportionally to the violin, we would expect to see the MAR and MWR mirror this pattern. However, the viola is proportionally smaller, meaning that the length of the wood and the volume of the air cavity are smaller in comparison to the wavelength of the instrument's lowest note. Table 1 shows the comparative lengths and air volumes of the violin, a proportionally scaled viola and a normal size viola.

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[23] On violins of poorer quality, the MAR and MWR do not occur near the two open middle strings and hence, a weaker tone is produced. For a more complete scientific discussion and the methodology used to determine these resonances, refer to Beament, 75-80, Rigden, 160-167 and Cremer, 350-356. Also refer to Rigden, 163 for the manner in which luthiers determine and adjust the relationship of the MAR and MWR.

[24] Based on John S. Rigden, *Physics and the Sound of Music*, 2d ed. (New York: John Wiley & Sons, 1985), 162. To determine a loudness curve, the instrument is bowed without vibrato in a manner which produces the loudest sound at each semitone interval throughout the range of the instrument. The sound-intensity level is measured and plotted for each semitone. The MAR is the second peak from the left and the MWR is the third peak from the left (the first peak is the "wood prime").

Table 1: Comparative Lengths and Body Volumes of the Violin and Viola[25]

	Violin	Proportional Viola	Actual Viola Measurements
Body length needed to make wood resonance correspond with violin (in inches)	14	21	16-17
Ratio needed to make air resonance correspond with a violin	1	1.5	1.07-1.2

The altered proportions have the effect of shifting the MAR almost a third higher. The MWR is also shifted to higher frequencies and consequently, the MAR and MWR are nowhere near the two middle open strings as seen in Figure 2.

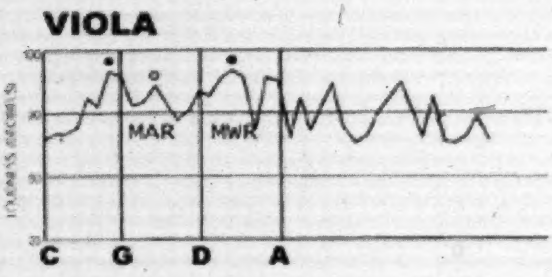

Figure 2 – Viola loudness curve[26]

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[25] Based on James Beament, *The Violin Explained: Components, Mechanisms, and Sound* (Oxford: Clarendon Press, 1997), 86.

[26] Beament, *The Violin Explained*, 167.

The shifting of these resonances has two important effects. First, it accounts for the nasal timbre of the viola's upper registers. Second, the intensity of the higher harmonics is less than those on the violin so that the viola is not nearly as bright in sound as the violin,[27] leading to this description of viola tone found in the Grove Dictionary of Music and Musicians: "less assertive, more mellow, even subdued at times."[28]

In both Figs. 1 and 2, there is another resonance peak to the left of the MAR. This is known as the "wood prime" peak. When the MWR is located near the open A-string (440 Hz) on the violin, the wood prime is located near the open G-string (220Hz), which has the effect of reinforcing the lower notes on the G-string. On the viola the wood prime, like the MWR, is shifted significantly higher, again contributing to the more nasal character of the instrument. One would also think that this would weaken the lower registers of the viola. Yet, the viola's lower register is frequently described as being "capable of a clear, beautiful, resonant and powerful tone eagerly sought by both makers and players".[29] How can this be?

2.1.2 Plate Thickness

As discussed earlier, the viola is anywhere from 1.07 to 1.2 times longer than a violin which means that the surface area of the instrument is larger. Yet, the thicknesses of the top and bottom plates of the viola are virtually the same as the violin at approximately 3mm.[30] This means that the plates of a viola are in fact proportionally thinner than those of a violin. Thinner plates are more flexible and consequently, they

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[27] Jürgen Meyer, *Acoustics and the Performance of Music* (Frankfurt/Main: Verlag Das Musikinstrument, 1978), 65.

[28] David Boyden and Ann M. Woodward, "Viola: The Modern Instrument," Grove Music Online, ed. L. Macy, [http://www.grovemusic.com] accessed 20 February 2007.

[29] Ibid.

[30] Beament, *The Violin Explained*, 62.

vibrate better in support of the lower frequencies. Thus, the viola maintains a rich and resonant lower register.[31]

2.1.3 Application: Sound Character

It should now be apparent how critical it is for the new violist to understand that the viola should sound different than the violin. The nasal timbre of the upper register and the deep, resonant lower register are part of the physical and acoustic nature of the instrument. In light of the evidence, it may seem incontrovertible that the viola should sound different from the violin but I observed some violists consciously attempt to counteract the differences in order to maintain a sound more consistent with the violin.[32] Further, there is a persistent lack of awareness of the need for a distinct viola sound, as data from the survey shows. So, how does one develop this awareness?

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[31] The use of a thinner, more flexible body combined with the heavier and thicker gauge strings of the viola leads to the characteristic "wolf note" phenomenon, common on violas (at the F above middle C on the C- and G-strings) and cellos (an octave lower than the viola) but mostly absent on violins. At these pitches or frequencies, which are the most resonant point on the instrument, the plates of the instrument vibrate at such intensity the bridge cannot support the string solidly, leading to the characteristic "stutter or warble". See Woodhouse, Grove Online and Beament, 79-80.

[32] Some violists try to offset the nasal quality of the instrument by playing with a lighter bow stroke and avoid the use of low positions in the left hand, resulting in a weak, violin-like sound. One historic account tells of a luthier who tried to counteract the nasal character by inventing a new instrument. Herman Ritter constructed a large viola in the late 19th century in an attempt to "improve" the viola sound. Wagner became fond of the new instrument; however, they were so large, they were impractical for most players and some criticized the tone since it sounded more like a cello than a viola. For more information, see Riley, 228-232. See also Cremer, 352-356 for experiments by Saunders and Hutchins in making a proportionally correct family of string instruments.

Realizing that the viola is an acoustically different instrument from the violin is a good first step. Another very useful exercise is the use of subjective descriptions consistent with these acoustic properties. Hector Berlioz, in his treatise on orchestration gave a very poetic account of the viola sound:

> Of all instruments in the Orchestra the one whose excellent qualities have been longest mis-appreciated is the viola. It is no less agile than the violin. The sound of its strings is peculiarly telling. Its upper notes are distinguished by their mournfully passionate accent; and its quality of tone, altogether of profound melancholy, differs from that of other instruments played with a bow.[33]

Some subjective descriptions survey respondents replied with were "dark, big, rich, warm, velvety."

Juliet White-Smith promotes the use of what she calls "vocal models" and has students develop a concept of sound that reflects the alto voice of the viola rather than the soprano qualities of the violin.[34]

Of course, all of these descriptions are subjective and will differ from player to player. However, the ability to characterize the viola sound with subjective descriptors, especially with descriptions different from those used to characterize a violin tone, ensures that the student is aware of his or her sound and helps to conceptualize and develop a unique sound concept.

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[33] As quoted in Hans Sitt, *Practical Viola Method* (New York: Carl Fischer, 1924), Introduction.

[34] Juliet White-Smith, "From Violin to Viola: Making the Switch a Success," *American String Teacher* 50, no. 1 (February 2000): 57. William Primrose wrote in his autobiography "A Walk on the Northside" that he sought the mezzo quality of the instrument over the contralto.

2.2 FOCUS

The second criterion of viola sound to examine is focus. Karen Tuttle promotes developing what she calls the "big" sound — a viola tone which is focused, penetrating and can be heard at any dynamic.[35]

However, many violinists transferring to the viola do not play with this sound. As Thomas Riebl pointed out to a class of violists, "It is important to open your ears to a focused sound. Most of you are used to playing with a floating sound."[36]

As discussed earlier, the viola does not have the tonal brilliance of the violin because of the shifted air and wood resonances and the resultant weakening of the higher harmonics. Without proper adjustments to violin technique to account for these differences, it is very easy for a student to play the viola with an unfocused sound. Not only does the lack of focus negatively affect the character, but it also affects the projection of the viola sound into the performance space. Often students are unaware that this is occurring because they concentrate on what they hear directly under their ear. Many become so enthralled with the mellow character of the instrument that they forget to play with a focused sound, one that projects into the performance space. Ivan Galamian, one of the 20th century's greatest violin pedagogues, stressed the importance of being aware of this sound:

> To train the ear for objective listening is of the greatest importance in order to be able to hear the sound as the audience would hear it and to free oneself from the flattering fallacies of the subjective ear.[37]

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[35] Dane, "Coordinated Effort," 30.

[36] Riebl, public lesson at Bad Leonfelden, 13 August 2006.

[37] Ivan Galamian, *Principles of Violin Playing and Teaching* (New Jersey: Prentice Hall Inc., 1962), 102.

It is important then, for the new violist to account for the dissipation of sound energy over distance and to learn to hear a projecting and focused sound from the audience's perspective.

2.3 CLARITY OF ARTICULATION

The final criterion to examine is the issue of clarity of articulation. Acute attention to how a note is attacked and released is critical for helping to define and characterize a viola sound — or any sound for that matter. Studies have shown that when the initial attack or "transient" is removed from a sustained note that has been recorded, it becomes virtually impossible for the human ear to determine which instrument is playing that note.[38] Why is it important to understand the viola from the perspective of clarity of articulation?

2.3.1 Mass

The answer once again lies in the physical properties of the viola. The weight of a 14" violin with its front plate thinned to a tap tone F weighs approximately 80 grams. A 16" viola thinned to a tap tone C weighs around 125 grams[39] and is therefore 1.5 times heavier than the violin.

2.3.2 String Thickness and Density

Similarly, viola strings are thicker relative to the same string position on the violin. That is, the viola A-string is thicker when compared to the violin E-string (see Table 2 for

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[38] J. Woodhouse, "Acoustics: String Instruments: Bowing," Grove Music Online, ed. L. Macy, [http://www.grovemusic.com], accessed 4 March 2007.

[39] Beament, *The Violin Explained*, 137. Tap tones refer to the pitch that is produced when one holds the instrument's plate near one end between thumb and forefinger and taps the plate in various locations, listening to the resulting pitches. (At this point the instrument is disassembled, of course.) By shaving the plate thinner, a luthier can change the tap tone.

measurements). The density or mass of the strings is also increased by using materials such as silver (or in some cases tungsten) in the winding.[40]

Table 2: Comparison of String Thickness Relative to Playing Position[41]

Jargar Steel-Core Strings (Measurement in mm)	4th String	3rd String	2nd String	1st String
Violin	0.75	0.72	0.45	0.26
Viola	1.08	0.79	0.73	0.44

String manufacturers increase the thickness and density of the string to achieve lower pitches while maintaining a reasonably sized string. According to Mersenne's law on vibrating strings, pitch is determined by the relationship of a string's length, tension, diameter and density:

$$f = (1/2L) \times \sqrt{(T/d)}$$[42]

On a viola, as on all stringed instruments, the sounding string length remains constant between strings so the way in which to achieve lower pitches is to increase the diameter/thickness of the string and its density/mass.

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[40] Ibid, 217. For the density of different winding materials and calculations on how this affects overall string density, see Jansonn, Chapter 4, pg. 11.

[41] www.jargar-strings.com

[42] Rigden, *Physics*, 100. Here f = fundamental frequency, L = string length, T = string tension and d = linear density of the string. Density is a function of diameter and mass.

2.3.3 Implications: Clarity of Articulation

There are two important implications of the increased mass of the instrument and its strings. First of all, it takes more energy input to overcome the initial inertia of the viola. What that means in practical terms is that more energy input from the bow is required in order to get the viola vibrating from a standstill.

Secondly, and conversely, once the instrument is vibrating, it acquires more momentum and therefore more energy is required to dampen the vibrations. The viola is a more resonant instrument than a violin and how the sound is dampened has immediate and obvious implications for controlling articulation and clarity. Too much resonance can make the sound unclear. As Beamant explains:

> Resonance is essential, but clarity and rapidity of response are particularly associated with adequate internal damping in the wood (as well as in the strings), because damping ensures that the instrument does not continue to vibrate with one set of frequencies…when the bowed string is producing different frequencies and different dynamic.[43]

In the overall analysis, we can discern that a viola has a slower attack response and a longer decay than a violin. A violist who does not consider these differences risks playing with an inarticulate, unclear sound.[44] Without clear articulation or initial transients, it is also difficult to establish the character of the viola sound.

2.4 BOW CONSIDERATIONS

The physical properties of the viola require that the violist be able to impart more energy into the string using the bow in order to achieve sound character, focus and

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[43] Beament, *The Violin Explained*, 93.

[44] Survey results indicate that most violists do not make special considerations for tone clarity. Out of 162 total responses to questions of right hand technique, only five specifically mentioned articulation and attack.

clarity. Bow makers have already attempted to compensate for this requirement to a certain degree. A typical viola bow is similar in length to a violin bow (in some cases about 1 cm shorter — 72 vs. 73 cm) and it weighs about 70 grams as opposed to the violin bow's 60 grams. Head and frog measurements are also slightly wider and taller by about 1 mm all around, which make for a stronger bow to support more arm weight or pressure from the player.[45] The wood is slightly denser but similar in stiffness meaning that a finished viola bow vibrates at lower frequencies than a violin bow, helping to match the tonal range of a viola.[46]

While the use of a viola bow does aid the player, it alone cannot account for improved tone production.[47] For the transitioning musician, the player himself can make technical adjustments to both right and left hand technique in order to help realize a full viola sound with less effort. These adjustments will be examined in detail in the next chapter.

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[45] Roy Quade, e-mail correspondence with author, 22 February 2007. Roy Quade is a multiple award winning Canadian bow maker. The measurements provided here are from Quade's workshop, however they can be considered standard as they are consistent with measurements of other bow makers.

[46] Ibid. This principle of higher density resulting in a lower vibrating frequency was seen earlier in the discussion on viola strings in Section 2.3. For more information on how the bow resonance affects string resonance, please refer to Askenfelt, 37-9.

[47] The viola bow is only 1.16 times heavier than a violin bow. The typical viola is 1.5 times heavier than a violin as discussed in Section 2.3.

CHAPTER 3: ACHIEVING A VIOLA SOUND: TECHNICAL CONSIDERATIONS

The goal of the technical adjustments explored in this chapter is to help the student maximize her sound potential on the viola while also increasing efficiency of effort. The ideas presented in this chapter are a distillation of the information collected from various viola pedagogy materials, the observation and instruction of viola pedagogues, and my personal experiences as a university viola instructor with eight years' experience. Discussion will focus on adjustments in the right and left hands along with posture considerations.

3.1 RIGHT HAND ADJUSTMENTS

> Most of the faults I find with people that come from the violin [to the viola] lie in the bow arm, and that's a very big problem indeed, and one that I find deeply interesting.[48]
>
> — William Primrose

The adjustments to bow technique under consideration are: applied bow weight, bow hold, bow distribution and speed, and bow attack and release.

3.1.1 Applied Bow Weight

The simplest and most obvious way to increase the amount of energy imparted by the bow into the string is to increase the amount of pressure or weight applied to the bow.[49] The critical factor that all pedagogical resources agree on is that increased bow weight must not be generated by downward muscle pressure, but rather by the natural effects of arm weight and gravity. As William Primrose stated so strongly: "…pressure

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[48] David Dalton, *Playing the Viola: Conversations with William Primrose* (New York: Oxford University Press, 1988), 5.

[49] Increased bow weight was the number one right hand adjustment suggested by survey respondents.

and viola playing are immiscible. While I would advance the opinion that pressure is not the best device for tone production on the violin, the violinist may get away with it in that his instrument responds more readily than does ours. Ours has to be wooed and won and resents manhandling and outrage."[50]

Data could not be found to support Primrose's hypothesis that the violin is less sensitive to the effects of pressing than the viola. The available data does support the notion that there is indeed a maximum (and minimum) amount of downward bow force (dependent on bow velocity and distance from the bridge) before tone quality is severely affected on any instrument, as seen in Figure 3.

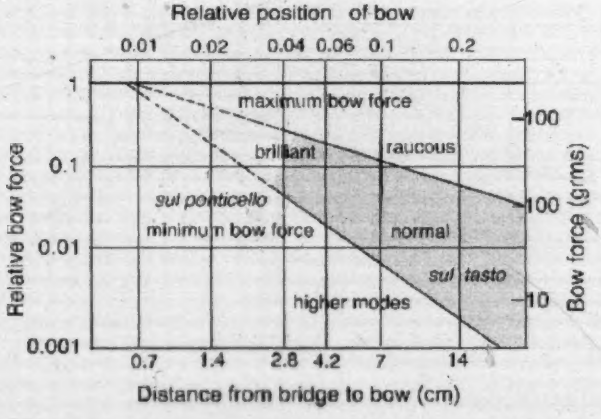

Figure 3 – Graph indicating the playing range available when bow force and bow's distance from the bridge are altered while velocity remains constant[51]

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[50] Dalton, *Playing the Viola*, 62.

[51] Woodhouse, Grove Online. Below the minimum bow force required, the Hemholtz motion or normal vibrating pattern of the string changes to one in which the string slips relative to the bow more than its normal once per cycle, resulting in "surface sound". Above the maximum bow force allowed, the Hemholtz motion is unable to "unstick" the string from the bow and the note loses its repetitive cycle. The result is a harsh, raucous "crunch". For more information on Hemholtz motion or the effect of bow on string, please refer to Woodhouse, Grove Online and Rigden, 124-132.

I have observed many new violists attempting to generate the increased requirement of energy simply by pressing harder on the bow with the arm and hand; the shoulder is also often raised to generate leverage. The result is that the upper limit of allowable bow force is exceeded and the tone becomes harsh. Karen Tuttle encourages the use of natural arm weight, as opposed to downward muscle pressure by encouraging violists to release their chest muscles and to find freedom in the armpit.[52] Thomas Riebl developed a concept for generating the required energy in the bow, which he calls the "swing stroke".

3.1.1.1 Swing Stroke

The swing stroke attempts to achieve a balance between vertical and horizontal motions made in the bow. Too much vertical motion can result in too much downward force and consequently a harsh sound, while too much horizontal motion can result in not enough bow force, resulting in a floating, surface sound as seen in Figure 3.

Balance is achieved through the use of a pendulum motion in the arm, which requires the arm to be free and relaxed, using gravity and the momentum of the natural arm weight to generate the energy.[53] As we shall see later on, this pendulum shape not only helps generate depth, resonance and focus in the sound on long strokes, but also clarity in the short strokes.

Another important consideration is how bow weight can be maintained as one approaches the tip on a down-bow stroke in order to sustain the tone.[54] The swing stroke, with its pendulum motion, helps address this issue somewhat since the shape of the arm

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[52] Dane, "Coordinated Effort," 30.

[53] Please refer to Appendix 2 for detailed procedures as to how the swing stroke can be taught and learned.

[54] As the bow reaches the tip, less natural weight from the frog and arm are available to generate energy. The bow is also less elastic near the tip, which means more force is required to generate sound. For more information on bow elasticity, please refer to Askenfelt, 26.

pendulum mimics the natural curve of the bow. Assuming that the hand stays on the same plane as the wrist and elbow, the hand will naturally pronate at the tip of the bow.[55] This pronation amounts to adding weight through the first finger to the stick and compensates for the loss of the frog and arm weight.

3.1.1.2 Repull

Karen Tuttle has developed another method in which the violist can maintain and even increase the energy being imparted at the tip of the bow. She calls this the "repull" and describes it as such:

> Starting at the frog on the down bow, as you approach the tip, the balance shifts through the hand. When you feel the first finger taking paramount pressure, you feel the pull across the knuckles towards the fourth finger and then the fingers straighten out towards the tip...the repull gives an extra energy pull at the tip.[56]

Observing her and her students teach this method, it looks as if the elbow and shoulder relax just after the balance point is reached on the down bow and the rebalancing of the hand allows for hand and wrist pronation. The extension of the fingers near the tip serves to increase the energy input further. The result is a full, expressive and rich tone at the tip. Through experimentation in slow passages, I have found that combining the swing stroke with the repull technique is a very effective method for maintaining and even creating energy near the tip, allowing for sustained expression.

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[55] Karen Tuttle refers to this set-up as alignment. Karen Ritscher, "An Interview with Karen Tuttle," *American String Teacher* 43, no. 4 (Autumn 1993): 88. See Appendix 2 for an illustration.

[56] Ibid., 89.

3.1.2 Bow Hold

There are three considerations which should be examined regarding the bow hold, regardless of the student's style of bow hold.[57] The first is that the viola bow should be held firmly while still maintaining flexibility. For some violinists, this will mean a firmer hold than they are used to with a violin bow. Primrose describes his own pedagogical experience: "I emphasize the importance of a firm and *supple* grip…A careless, loose grip will produce a tone that is fuzzy and lacking in body." He goes on to advocate holding the bow more like a cellist with the fingers "encircling the stick much more amply than is common practice on the violin."[58]

Riebl also advocates a firm grip, teaching that the bow is held with the same energy as a "good firm handshake" — the hand does not squeeze the bow; rather it uses what he terms "good energy" in holding the bow. [59] To describe this energy, he compares the tips of the fingers to suction cups. This allows the bow to be held with firmness yet the fingers still have an inherent flexibility (or suppleness as Primrose refers to it) in them. Key to this concept is that the fingers remain firm and flexible on the stick, yet they are not active. Generally, they do not initiate any bow motion on their own but rather react to the pull of the bow arm and the friction of bow against string. [60]

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[57] For discussions on the Russian, German and Franco-Belgian styles of bow holds, refer to Kimber, 61-63 and Topper, 20-31.

[58] Menuhin and Primrose, *Violin and Viola*, 176-7. For exercises in developing firmness and suppleness in the bow hold as taught by Primrose, please refer to Dalton, Chapters 6 and 7.

[59] Riebl, interview by author at Bad Leonfelden, 17 August 2006.

[60] For exercises to develop this approach to the bow grip, please refer to Appendix 2.

The second consideration is that the bow hold should promote a consistent flat bow hair angle on the viola. Both Tuttle and Primrose are explicit on this point.[61] The flatter angle of the bow seems to promote a bigger tone with no increase in effort, according to the experience of many eminent string players.[62]

The third consideration was brought forth by Jutta Puchhammer-Sédillot, professor of viola at the University of Montreal. Whereas it is quite typical for a violinist to hold the bow with the thumb situated between the 1st and 2nd fingers, Puchhammer-Sédillot suggests that the thumb should be situated between the 2nd and 3rd fingers on a viola bow.[63] This has the effect of shifting the balance of the hand so that the hand angle is slightly more horizontal. This seems to promote even arm weight distribution throughout the entire bow hold.

3.1.3 Bow Distribution and Speed

Violinists transferring to the viola should also consider playing lower in the bow than they might be used to on the violin. Playing closer to the frog of the bow is another simple way of effortlessly increasing the amount of energy that is directed into the string since the bow is naturally heavy near the frog and it is much easier to access the weight of the arm.[64]

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[61] Ritscher, "An Interview," 88. Also Matson Alan Topper, "Correcting the Right Hand Bow Position for the Student Violinist and Violist," D.Mus. dissertation (The Florida State University, 2002), 106.

[62] Topper, "Correcting the Right Hand Bow," 37-39. See also Askenfelt, 29 for a possible scientific explanation.

[63] Jutta Puchhammer-Sédillot, e-mail correspondence with author, 18 September, 2007.

[64] It is also a matter of comfort. According to Puchhammer-Sédillot, bow distribution which favors the lower half is a more natural playing position for the violist. A comfortable playing position for the bow arm is at approximately 90 degrees flexion. Because of the viola's larger size, the bow arm of a violist is further away from the body than that of a violinist and by using a bow distribution which favors the lower half of the bow, the violist is playing in a more comfortable position for the arm.

Using a slower bow stroke while maintaining an even arm weight also increases bow energy since the energy created by the bow velocity is essentially concentrated over a smaller area.

3.1.4 Bow Attack and Release

Short notes such as *collé* and *spiccato* on the violin are often approached from above the air with a bounce stroke.[65] Because of the viola's slower attack and decay time as well as its requirement for more energy to initiate vibration, it is critical that the violist learn to start her attacks of short notes from the string and to allow for a quick release in order to maintain clarity. Attacks from the air on quick and short notes often do not allow enough time or impart enough energy to get the string sounding with clarity. By starting from the string, the bow has extra time and weight to activate the string and a quick release allows for proper decay before the next note begins. In essence, strokes such as *collé* and *spiccato* should be approached more like a *martelé* stroke (i.e. starting from the string with a good "pinch") with consideration of adjustments to bow distribution, speed and weight as discussed above.[66]

Even in *spiccato*-type passages, where the bow is thrown down on the string and lifted (on slower passages) or rebounds (faster passages)[67] on the violin, it is possible to have the viola bow stick bounce energetically without having the hair leave the string.[68]

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[65] Galamian, *Principles*, 73-77.

[66] Galamian, *Principles*, 70-71.

[67] Ibid., 75.

[68] David Wallace, "From Violin to Viola: Effecting a Smooth Transition," *American String Teacher* 43, no. 3 (Summer 1993): 72. Leaving the bow on the string in these passages also helps with damping of the string, leading to greater clarity of articulation. There are of course some strokes which will need to leave the string, depending on tempo and character. However, it is generally advisable to start even these strokes from the string so that the initial transient is clear.

Again this allows for clean attacks and releases, meaning greater clarity and depth of tone.

3.2 LEFT HAND ADJUSTMENTS

Adjustments to the left hand have to do primarily with the increased string length. This has implications for vibrato as well as left hand set-up and finger spacing.

3.2.1 Vibrato

According to survey respondents, vibrato is the number one concern when transitioning from violin to viola. Since pitches are spaced wider apart because of the increased string length, the new violist must widen the vibrato so that the oscillations are apparent to the ear. If the vibrato is too narrow, it may not be heard. In order to develop a wider vibrato, White-Smith advocates playing further back on the pads of the finger.[69] Essentially this widens the area the finger covers, allowing it oscillate over a wider area. (As we shall see momentarily, this flatter finger angle has important implications for the left hand position.)

However, White-Smith cautions that, while wider, viola vibrato is not necessarily slower.[70] Her comment is most likely addressing the tendency of many new violists to exaggerate the width and slow speed of the vibrato.[71] The solution once again has to do with sound awareness, especially in the area of sound character. The new violist should develop a wide repertoire of vibrato speeds and widths and find the correct combinations to suit the desired tonal character.

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[69] White-Smith, "From Violin to Viola," 59.

[70] Ibid.

[71] Wallace, "From Violin," 72. In some instances the slow speed and width of the vibrato are exaggerated so that the oscillations become excessively noticeable and the width has the effect of making the pitch sound distorted.

3.2.2 Left Hand Set-up/Finger Spacing

As was previously noted, a flatter finger angle helps widen the vibrato. It also allows the hand to open up wider promoting greater reach between fingers.[72] Increased spacing between notes on the fingerboard was the second most frequently expressed concern by survey respondents and a flatter finger angle would seem to address this issue.

This adjustment may necessitate some changes in the left hand set-up, especially the wrist angle, depending on the player's physiology. A flatter wrist angle than one is used to on the violin allows for flatter fingers without increasing tension in the forearm or straining the wrist (Figure 4).[73]

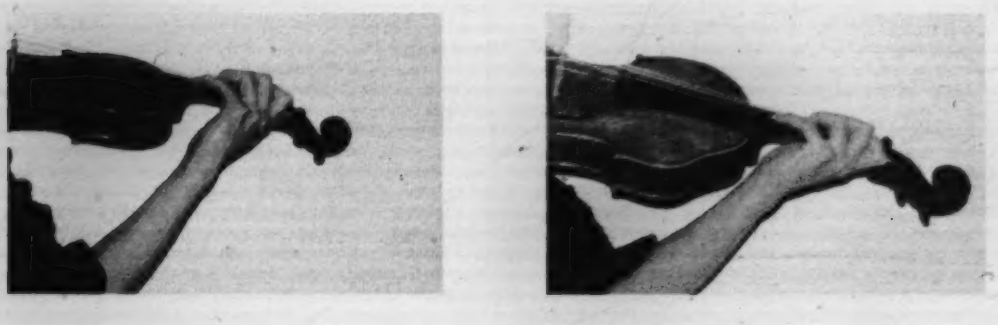

Figure 4 – Wrist angle on violin (left) vs. viola (right)

3.2.3 Fingering Considerations

Primrose considers viola-specific fingerings to be one of the most critical differences for violinists learning the viola. "Almost for longer than I care to remember, I

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[72] White-Smith, "From Violin to Viola," 59.

[73] Some students will actually try to promote a flatter finger angle by extending the wrist outwards. While this does flatten the fingers, it also has the effect of shortening the reach of the fingers and applies unnecessary tension in the hand, wrist and forearm.

have held that to finger the viola as an analogue to the violin has been the downfall of most violists, and the fault persists today." Understanding this distinction was critical for him in order to evoke "the sonorities and the rather exclusive beauties of the viola as distinct from the violin."[74]

Some of the considerations for viola fingerings are purely practical. The larger spacing between notes means that for the small to average hand frame, extension fingerings cannot be used as frequently as on the violin. However, playing for longer periods in half position is certainly possible.

Most of the considerations in fingering, though, are for reasons of tone character and focus. Primrose promoted the use of open strings, lower positions and string crossings with the aim of achieving a distinct tonal character while enhancing the tonal brilliance or focus, especially on the lower strings.[75] Riebl is also quite insistent on these points as well, promoting fingerings that will help the viola project its sound with greater ease.

Of course, there are many things which one must consider when selecting fingerings, not the least of which is musical context. There are so many esthetic factors — historic and performance practice considerations, the individual sonority of different instruments, etc. — that it is difficult to recommend that the new violist exclusively choose low position fingerings and open strings. Nevertheless, since these fingering choices often do enhance tonal character, quality and even clarity, it is of critical importance for the student to at least explore them and see if they could be appropriate for the musical context.

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[74] Dalton, *Playing the Viola*, 114.

[75] Dalton, *Playing the Viola*, 115-6.

3.3 POSTURE CONSIDERATIONS

The increased mass and length of the viola often means that new violists will compensate by holding the scroll of the instrument at a lower angle. Roland Vamos advises that this position might only be appropriate in "self-defense" if one is playing Wagner operas or works of similar duration — the implication being that over a long period of continuous playing, a lower viola position might help to relieve some muscle fatigue. Otherwise, he advocates keeping the viola up, as one would on the violin, citing the "distinct audible difference in rhythmic precision, the expressive quality, and sound when the viola is up."[76] A higher viola also facilitates shifting into the higher positions since the hand is not required to shift against gravity as it would if the viola were held at a lower angle.

Wallace and Primrose also advocate keeping the viola up while Tuttle stresses that the pelvis, chest, shoulders, neck and head should be in line with each other in order to support each other. Any hunching over in the posture means that gravity is working against the physiology.[77]

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[76] Vamos, "From Violin to Viola," 179.

[77] Dane, "Coordinated Effort," 28. See also Wallace, 71 and Dalton, Chapter 5.

3.4 TECHNIQUE ADJUSTMENT SUMMARIES

Table 3: Right Hand Technique Adjustment Summary

Physical/Acoustic Considerations of Viola Compared to the Violin	Right Hand Technique Adjustments
Increased bow energy required	• Increased applied bow weight without using downward muscle pressure • Firmer bow grip • Adjust thumb position in bow hold • Flatter bow hair angle • Swing stroke • Repull • Bow distribution which favours the lower half • Slower bow speed
Increased attention to attacks and releases required	• Quick strokes initiated from string • Bow may remain on string for fast passages with consecutive notes • Swing stroke • Bow distribution in lower half

Table 4: Left Hand Technique Adjustment Summary

Physical/Acoustic Considerations of Viola Compared to the Violin	Left Hand Technique Adjustments
Increased string length	• Wider (but not necessarily slower) vibrato • Flatter finger angle (and possibly wrist angle, depending on player's physiology)
Fingering considerations	• Lower positions do contribute to a brighter and more focused sound when desired • Half position playing can be more frequent • Use of extensions is less frequent

3.5 LEARNING TYPES

Having had the opportunity to explore the criteria of sound awareness and the technical adjustments required to achieve full sound potential, it may now seem that some of that discussion is rather obvious — the viola should sound different than the violin and should have a different technique. But if the observation is so obvious, why are there so many people who approach the viola like a big violin, as evidenced in Chapter 1? Data and observations show that there are two main types of learners.

3.5.1 Implicit Learners

It should be noted that for a small percentage of the population of violinists, the issues under discussion are known. These people have developed an awareness of the three criteria of sound on the violin, which they are then able to apply to the viola

intuitively. Some also have a violin technique that more closely approximates viola technique as described earlier in this chapter.[78] For the sake of classification, these people have been termed Implicit Learners, since the viola sound potential is realized and adjustments to technique are made implicitly, with little to no outside instruction required.

Implicit Learners could best be characterized by a comment made by Lillian Fuchs, one of the 20th century's most prominent viola performers and pedagogues: "The technical aspects of the two instruments are very similar…A good violinist picks up a viola, and he is immediately a good violist! If a player has a fine ear and a well trained bow arm, the change [from violin to viola] is not difficult."[79]

For these learners, it is sufficient for them to focus on the *similarities* between the instruments because their sound awareness and "well-trained" technique allow them to adapt instinctively to the viola. As Karen Tuttle points out though, Implicit Learners are the exception: "Some people transfer easily, but many others never lose their violin sound."[80] What percentage of the violin population these learners actually comprise is unknown at this point — what is clear is that Implicit Learners are in the minority.[81]

3.5.2 Explicit Learners

The majority of learners are classified, for the purposes of this essay, as Explicit Learners — they are people who must receive detailed instruction on the *differences*

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[78] Menuhin and Primrose, *Violin and Viola*, 175.

[79] Samuel Applebaum and Sada Applebaum, *The Way They Play*, book 2 (New Jersey: Paganiniana Publications, 1973), 209.

[80] Ritscher, "An Interview," 88.

[81] This conclusion is based on anecdotal evidence of pedagogues, observations of their teaching in public settings, and observation in my own university viola studio. Of the approximately 20 or so viola students I have worked with in the past eight years, only two fit the definition of an Implicit Learner as described above.

between the violin and viola in order to realize the viola's full sound potential. As White-Smith pointed out, these are the students who, when making the transition, "continue to be frustrated with issues such as tone production, articulation, and vibrato. Frustration is usually the result of focusing on the similarities between the violin and viola instead of the differences."[82]

In some cases, it may be that the student does not yet possess the skills on the violin, the "well trained bow arm" to which Fuchs refers, to either produce a good tone on either instrument or to make automatic adjustments to technique to adapt to the viola. According to data collected from the survey, many violinists switch to the viola because of difficulties on the violin. In fact, over 25% of respondents said they switched to the viola because their teacher thought it would suit their body type better or because of certain technical deficiencies on the violin.[83] It is clear that this type of Explicit Learners, which I have classified as Non-Expert, would have great difficulty achieving the three criteria of sound awareness and the necessary technical adjustments due to impaired technique.[84]

In cases where technical proficiency may not be the issue, it may be that the student does not have the knowledge or awareness that the sound of the viola should be distinct and unique from the violin, as was discussed in Chapter 2. The reason these accomplished or Expert[85] violinists may overlook the differences between violin and

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[82] White-Smith, "From Violin to Viola," 56.

[83] Exploring the social implications of these statistics is beyond the scope of this thesis. However, it would be an interesting topic for further study to examine whether the historical prejudices held against the viola as detailed in Section 1.2 are still present.

[84] Non-Experts may be defined as those violinists who focus most of their conscious effort on achieving basic fundamental technique. They struggle playing pieces of moderate difficulty with fluency.

[85] Experts may be defined as those violinists who are able to perform pieces of moderate to high difficulty fluently on the violin and where constant conscious attention to basic technique is not required.

viola is because of the *subtlety* of these differences. As White-Smith points out "the amount of discipline needed to concentrate on changes from violin to viola is much greater because the differences between the instruments are subtle. In some ways, the switch from violin to, say, cello or bass, may be easier because the distinction in techniques is drastic compared to the subtle differences between violin and viola."[86]

For these students (and teachers), explicit comparisons between the sound and tactile differences between the violin and viola would be very useful.[87]

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[86] White-Smith, "From Violin to Viola," 60.

[87] In his article titled "Viola Pedagogy and Musical Learning", Gregory Barnes a viola lecturer at USC discusses the "critical thinking skills for acquiring musical knowledge" (186). One of the critical skills is the ability to organize information so that it can be processed effectively. The first step in organizing information is the use of *comparison* where similarities and differences between entities are noted before they can be classified and ordered for further processing.

CHAPTER 4: THE VIOLA SOUND IN CONTEXT: MOZART'S SINFONIA CONCERTANTE, KV 364

4.1 COMPARISON IN CONTEXT

Mozart's Sinfonia Concertante, KV 364 provides is an excellent platform for comparison. Composed in the summer of 1779, this work is a double concerto for violin, viola and orchestra. What makes this work ideal for comparison between the violin and viola is the equality of part writing. The solo violin and viola parts are treated similarly throughout the entire work, dominating the texture equally as solo instruments.[88] This presents an excellent opportunity then, to make direct comparisons between analogous passages — the violinist can learn a certain passage on the violin and then proceed to learn the related passage on the viola. If the violinist plays the passage on both instruments with the same technique (bow weight and distribution for example), she should be able to, with directed attention, hear the inadequacy in sound and feel the tactile sensation resulting in this unpleasing viola sound. Using selected passages from the Sinfonia Concertante, this chapter will direct the violinist's attention to what she should be listening for in the viola sound and feeling in both hands, based on the information provided in Chapters 2 and 3.

4.1.1 A Note About *Scordatura*

It is logical to conclude that Mozart, a skilled violinist and violist, understood the acoustic challenges the viola faced, especially when paired with the brighter, more projecting sound of the violin. His solution was to write the viola part in D major and

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[88] Charles Hazelwood, in his BBC presentation, "Discovering Music: Mozart's Sinfonia Concertante, K 364" points to the fact that it is standard orchestration for a violin concerto to have two supporting violin sections. It is noteworthy then that Mozart creates a sense of symmetry in the texture by having two supporting viola sections in the orchestra. The orchestration is 2 oboes, 2 horns, Violins I and II, Violas I and II, Cellos and Basses.

have the violist tune his entire instrument up a semi-tone, resulting in E-flat *scordatura*. The result is a brighter and louder sounding instrument due to the higher string tension.[89] The resonance of the viola is also increased since three of the open strings correspond with the tonic (Eb – raised D-string), subdominant (Ab – raised G-string) and dominant (Bb – raised A-string) of E-flat.[90] As well, intonation is made easier since open strings may be used with much greater frequency.

While it may be correct performance practice to perform this work using *scordatura* tuning, for the purposes of this thesis, all discussions will refer to standard tuning. Other than a couple of minor exceptions, most of the viola repertoire is in standard tuning. It is critical that the violinist transitioning to the viola learn how the viola responds under normal string tension and set-up in order that the principles learned here may be applied to other works.

4.1.2 Procedure

In order for direct comparisons to be possible, it is recommended that the student learn the violin passage under consideration first. The student may then play the viola passage as if playing a large violin, noting the aural and tactile experience. Finally, the student may make the technical adjustments as suggested here and in Chapter 3, listening for the three sound criteria described in Chapter 2.[91] Fast and slow bow strokes as well as left hand issues will be explored using this model.

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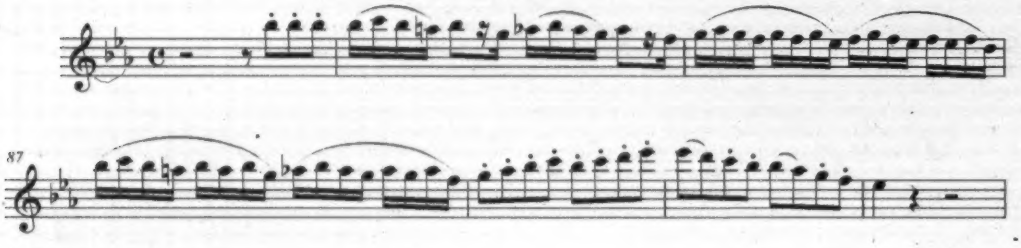
[89] The *scordatura* would also help to set the solo viola colour apart from the *tutti* viola colour.

[90] Open strings have greater resonance than the equivalent notes stopped with a finger. As well they serve to reinforce related stopped notes as overtones through sympathetic vibration.

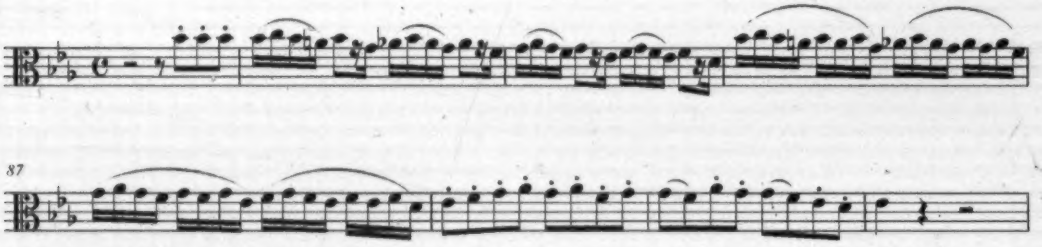
[91] The level of difficulty of the Sinfonia Concertante naturally precludes Non-Expert players from learning this work. However, the sound criteria and fundamental technical adjustments as discussed in Chapters 2 and 3 are still extremely important for Non-Expert learners and may be applied in more suitable musical contexts.

4.2 FAST BOW STROKES I

The first example of necessary adjustments to sound concept and technique in a fast passage is from the first movement. The three main issues that we are dealing with are the short staccato notes, eighth note slurs and the hooked bowing pattern.



Example 1a – Violin: 1st movement, mm. 84-90

Violinists will typically approach the short staccato notes in measures 84 and 88-89 from the air with a brush-type stroke, using the middle to upper half of the bow. The slurs consequently will also be played in the upper half in measure 88. Violinists will also typically hook the eighth-sixteenth figure in measure 85 in the middle to upper half of the bow.

Example 1b – Viola: 1st movement, mm. 83-90

If the corresponding viola passage were to be played using the violin technique as described above, the student should notice a few things. Aurally, the sound might be pleasant under the ear, but anybody in a room with that violist would be able to tell him that the sound did not have focus or projection. Clarity in the eighth note staccatos would

be lacking, especially in the area of initial attack. The same would hold true for the sixteenth notes in measures 84 and 85 if the figure were hooked. The slurs in measure 89 would also most likely be lacking any depth or character of tone. From a tactile perspective, the bow would not feel like it was grabbing or pinching the strings to initiate the attacks nor would it feel like it was able to generate sufficient weight in the slurred notes in measure 89.

4.2.1 Recommended Adjustments

The first technical adjustment that can be made is to shift the bow distribution so it favors the lower half, preferably around the balance point of the bow. The bow has a natural bounce at this point and it is easier to generate more weight with less effort as described in Section 3.1. This principle can be applied to the entire passage. In combination with this shift, a lesser amount of bow can be used, especially in the slurs. This not only helps to increase the concentration of weight, it also keeps the bow distribution in the lower half. As discussed in Section 3.1, the staccato notes should be initiated from the string, much like a *martelé* attack but again, limiting the amount of bow spent is important to maintaining focus and clarity. Finally, a small swing stroke can be used effectively on the staccato notes and slurs. The pendulum motion will ensure clean attacks, adequate weight in the middle of the stroke, and clean and quick releases.

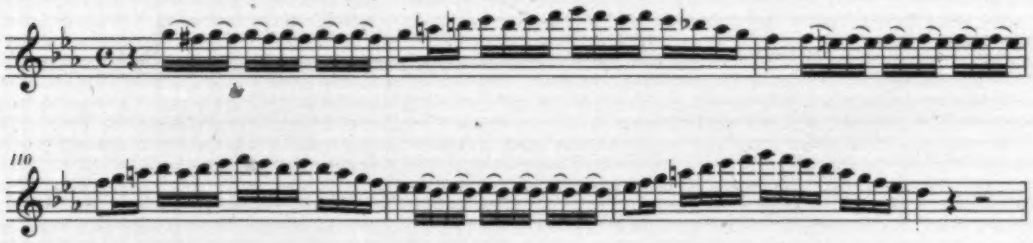
These adjustments should help the student achieve tonal clarity of the short staccato notes and the hooked sixteenths as well as the depth of sound in the short slurs of measure 89. Depth of character and focus will result, in this case, from having a clear attack and release. However, students must take care to listen that they are not overcompensating as well. Sometimes students will attack short notes from the string but instead of using natural weight and momentum to generate the sound, they end up pressing which causes distortion in the sound. If they are pressing, they will also often

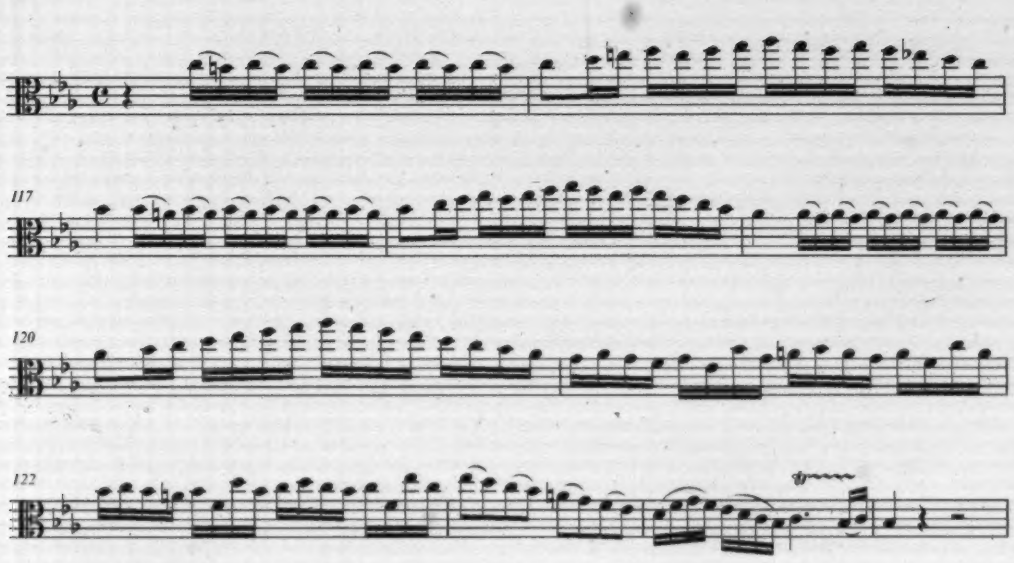
fail to release the string. The result is often short notes with distorted tone quality and pitch with no resonance.

4.2.2 Further Application

Please refer to Appendix 3.1 for passages in which similar adjustments are necessary.

4.3 FAST BOW STROKES II

The other fast bow consideration concerns rapid, consecutive notes.

Example 2a – Violin: 1st movement, mm. 107-113

Violinists will often begin this passage with the slurs in the upper half of the bow and then play the separate sixteenth note runs in the upper half or closer to the middle with a slight bounce.

Example 2b – Viola: 1st movement, mm. 115-125

If the same approach is taken on the viola, the student will hear similar results as the previous example — the slurs will lack focus while the sixteenth note runs will be very unclear and lack projection, especially if the student attempts to bounce them with a *spiccato*-type stroke. The tactile sensation would be that the bow once again was merely slapping the surface of the string in attempting to generate the tone.

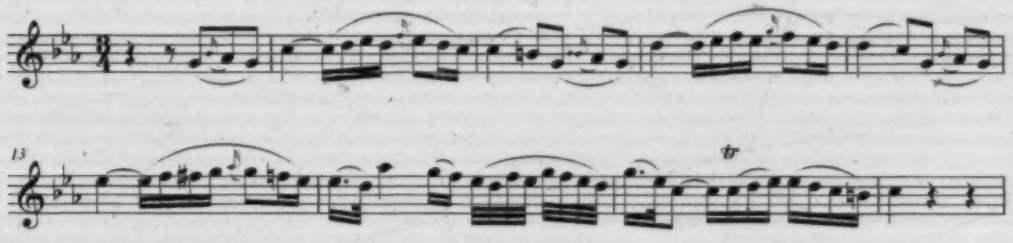
4.3.1 Recommended Adjustments

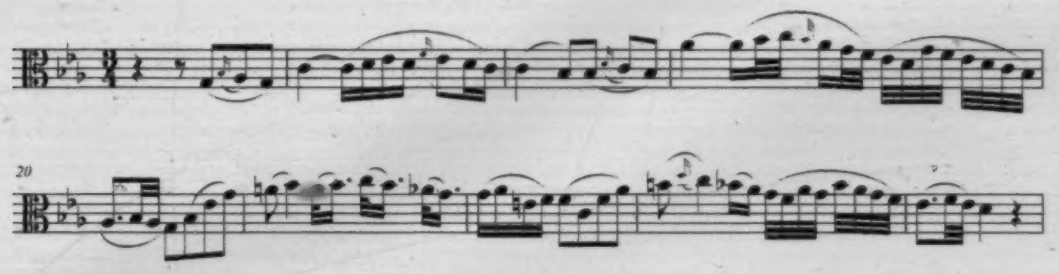
Similar to the previous example, bow distribution should be adjusted lower in the bow, less bow should be used and a swing stroke should be employed in both the slurs and the sixteenth note runs. However, it is important to note that the swing stroke, while releasing, *should remain on the string*, especially in the runs. This again allows for clarity in attack and release as was seen in Section 3.1.

4.3.2 Further Application

Please refer to Appendix 3.2 for passages with similar adjustments are required.

4.4 SLOW BOW STROKES

To demonstrate some of the adjustments to sound and technique required for slow bow strokes, we will look at the second movement of the work.

Example 3a – Violin: 2nd movement, mm. 8-16

It is obvious that the longer, sustained tones are important to the character and phrasing of this passage. A violinist, listening to her sound would choose an appropriate bow weight and speed to achieve that sustained sound which promotes longer phrasing. If the student were then to play the concomitant passage on the viola using similar weight and bow speed, the results would be much different.

Example 3b – Viola: 2nd movement, mm. 16-24

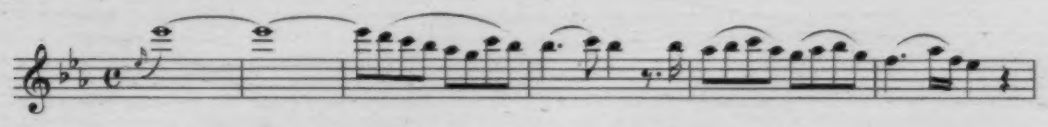
The tone would lack the depth of character and quality present on the violin and the ability to sustain the sound for longer phrasing would be negatively affected. From a tactile point of view, the bow may feel like it is on the top surface of the string. There

may even be a sensation of less vibration from the string, instrument and bow, especially towards the tip of the bow.

4.4.1 Recommended Adjustments

In order to achieve depth in the tonal character and quality throughout the entire bow, the combination of a long swing stroke with the use of Tuttle's repull technique is recommended. Again, the student must be aware in his tone and technique that the fuller sound is not created through downward muscle pressure but rather through natural arm and bow weight. Both the long swing and the repull allow the violist to create a sound that is focused and has depth and resonance throughout the entire bow stroke.

4.5 LEFT HAND POSITION

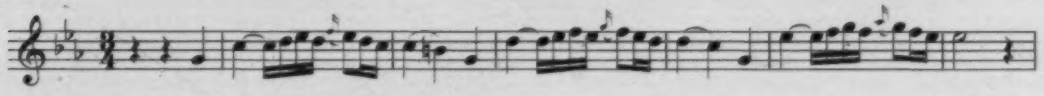
The first movement presents a passage which is effective at demonstrating the different requirements for left hand position.

Example 4a – Violin: 1st movement, mm. 72-77

Depending on physiology, the violinist should be able to play this octave passage with a fairly straight alignment of hand, wrist and forearm, even in fourth position. On the analogous viola passage, the larger stretch (which is magnified by the fact that the passage is in first position) and the use of a flatter finger angle may necessitate a flatter wrist angle as discussed in Section 3.2 (see Fig. 6).

Example 4b – Viola: 1st movement, mm. 72-77

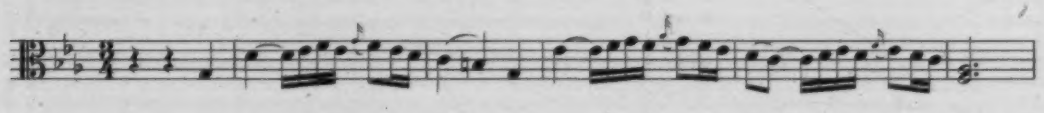
4.6 VIBRATO

The opening of the second movement cadenza serves to illustrate what adjustments can be made to the vibrato so the student can achieve the tonal character he is seeking.



Example 5a – Violin: 2nd movement cadenza, opening

The assumption is that a normal violin vibrato is narrower than a viola vibrato due to the shorter string length. Of course, there are many esthetical considerations and a violinist may choose a wider, slower vibrato for an expressive passage such as the one above. For the sake of illustration, let's assume that the violinist chooses an expressive yet moderate width and speed for this passage.

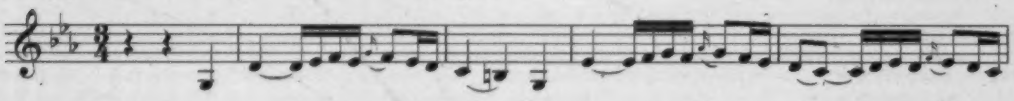


Example 5b – Viola: 2nd movement cadenza, opening

If the violinist then plays the similar passage on the viola with the same width, speed and finger angle, the result is an almost inaudible vibrato. As was discussed in Section 3.2, a longer viola string length requires a wider oscillation and playing with a flatter finger angle help in this effort. The student though, must guard against overcompensating the width or speed — this passage will allow the student to clearly hear when the vibrato becomes excessively wide or slow, negatively affecting the tonal character.

4.7 FINGERING

As discussed in Section 3.2, fingering is a highly personal choice, based on many esthetic considerations. However, there are some instances where choosing to finger a passage in a lower position can truly improve tone character and focus. For this illustration, I have selected the opening of the second movement cadenza once more but have transcribed the viola part for the violin.



Example 6a – 2nd movement viola cadenza transcribed for violin

A typical violin approach to fingering (especially one that does not consider performance practice for this historic period which encourages lower position fingerings) would be to play the passage all on the G-string. This would help achieve a rich, even sonority throughout.

However, if the same passage were played with the same fingering on the viola, one would hear a dull, uneven tone, especially as the passage progresses higher on the G-string. This again is the result of the acoustic properties of the viola, especially considering that the viola's wolf tone lies in this region, as discussed in Section 2.1. Fingering this passage mostly or entirely in first position would result in a brighter, more focused tone and would be wholly appropriate considering the musical (and historic) context.

4.8 NOTA BENE

It is important to remember as the student is striving for a viola sound with character, focus and clarity, that none of the above adjustments exists in isolation. Right hand and left hand adjustments should be combined to achieve the appropriate quality of

sound suitable for the musical context. William Primrose encouraged violists to "experiment, experiment, until you get the sound you wish."[92]

One final important consideration is that the above discussion on sound and technique is suitable for the violin and may help violinists realize their full sound potential on that instrument. Primrose echoed this sentiment as well, saying "what is good for the viola is certainly good for the violin."[93] It is not surprising then that some universities and conservatories insist on mandatory viola training for violinists.

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[92] Dalton, *Playing the Viola*, 110.

[93] Ibid.

CONCLUSION

As we have seen, the viola is a fundamentally different instrument than the violin. Its unique acoustic and physical properties have important implications in areas of sound awareness and technique. Unfortunately, many of the violinists who make the transition to the viola are unaware of these differences, treating the viola as a large violin. Consequently, these musicians do not realize their full sound potential on the larger instrument.

In order to address this issue, it is important that new violists develop an understanding and awareness of sound, particularly in three areas: character, focus and clarity. Once the violist has developed a clear concept of these three aspects, she can then explore adjustments to violin technique in the right and left hand which will help her to achieve the sound she desires. Most of these adjustments occur in the right hand, addressing the need for increased energy input to activate the instrument and strings as well as attentive releases. There are also some important left hand adjustments, which affect intonation and tonal character.

Because of the subtlety of many of these adjustments, it is important for most new violists to be able to compare and illustrate the differences between the sound and technique of the two instruments in a musical context. Mozart's incredible double concerto for violin and viola, the Sinfonia Concertante in Eb, KV 364, not only serves to illustrate these differences clearly and concisely, it also provides the musician with a rich and rewarding musical experience.

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APPENDIX 1

VIOLA FOR VIOLINISTS: A SURVEY

This survey was first distributed in 2004 in a paper version. Respondents returned the survey in person or by mail. In 2006, I received approval to transfer this survey online where it was hosted by www.questionpro.com. In all, there were 109 respondents from the United States, Europe and Canada. Data from open-ended questions were interpreted and then categorized to form statistical data. For instance, responses to questions of the right hand in Question 7 were sorted into categories such as bow weight, speed, no differences taught, etc.

Section A: Personal Study Experience

1. I began my studies on the: (please indicate with an "x")

   a) violin __
   b) viola __

2. At what age did you begin your studies on the above instrument? ____

(If you answered "b)" in question one, please skip to Section B.)

3. At what age did you begin viola? ____

4. Why did you begin studying the viola?

5. When I began my studies on the viola I:

   a) continued viola lessons with my violin teacher __
   b) switched to a teacher who specialized in viola __
   c) other __

Comments:

6. The teacher, who supervised my switch from violin to viola, was effective at pointing out the fundamental differences between the two instruments:

(1 = strongly disagree, 5 = strongly agree, please circle)

SD				SA
1	2	3	4	5

Comments:

7. The main differences between playing the violin and viola I was taught were:

a) in the Left Hand:
b) in the Right Hand:
c) other:

Comments:

8. Learning to read the alto clef was easy:

(1 = strongly disagree, 5 = strongly agree, please circle)

SD				SA
1	2	3	4	5

9. How did you learn to read the alto clef?

Section B: Performance and Pedagogy

10. I teach or have taught:

a) violin only __
b) viola only __
c) both instruments __
d) I have not taught up until this point __

Comments:

11. The most important differences between violin and viola technique as I understand them and would teach them are:

a) in the Left Hand:
b) in the Right Hand:
c) other:

Comments:

12. The studies, which I would recommend to students switching from violin to viola (and the reasons for their selection), are:

13. The pieces, which I would recommend to students switching from violin to viola (and the reasons for their selection), are:

14. The resources (books, biographies, videos, etc.), which I would recommend to students switching from violin to viola, are:

Section C: Personal Data

15. How many years have you been playing the viola? ___

16. Are you currently a student and if so, at what institution?

17. Are you currently a teacher and if so, at what institution?

18. Are you currently performing with a professional ensemble or orchestra?

APPENDIX 2

TEACHING THE SWING STROKE AND BOW HOLD

As discussed in Section 3.1, two critical technical considerations in the right hand are a firm, yet flexible bow hold and the use of the swing stroke. The following discussion is a step-by-step approach to learning and teaching these two concepts. The swing stroke discussion is based on my studies with Thomas Riebl and integrates some principles I learned while studying the Saito conducting method. The bow hold discussion is based on how I teach firmness and sensitivity to my viola students in the right hand, and is the distillation of many years of study with various teachers.

Swing Stroke

The most important concept to remember is that the swing stroke is based on a pendulum motion. In order for that pendulum motion to be effective, the right arm must be completely free. A good exercise to develop this awareness is for the instructor to simply raise the student's arm above his head. The instructor will then move the arm around and shake it in an attempt to have the student feel the shoulder muscles released and the ball of the shoulder moving freely in its socket. The teacher can then drop the arm unexpectedly. If the student is holding tension in the arm, the arm will be stuck, even if only momentarily. This action is repeated until the arm falls freely.

Once this awareness of a free arm is developed, the student can then proceed to learn the pendulum motion across the front of the body, first without the bow or instrument. Every student will have a maximum point at each end where the pendulum motion will reverse. However, it is important to ensure that the motion does not stop or get stuck at either end — if it does, the arm is not free. Another point of awareness is ensuring that gravity and the natural arm weight are responsible for the motion — if this is occurring, there should be a slight acceleration of the arm as it reaches its lowest point

and a slight deceleration as it approaches one of the maximums. Throughout this procedure, the hand is kept in on the same plane as the arm (Figure 5).

Figure 5 – Alignment of arm and hand

Once this motion is fluid, the procedure is repeated with the bow in hand, using a normal bow hold. Again, freedom of motion is critical. The bow should remain somewhat parallel to the body through the motion (Figure 6).

Figure 6 – Bow stays near parallel to body even through the top of the pendulum motion. This promotes natural pronation in the hand.

Finally the stroke is introduced on the viola using open strings. First, the swing stroke is taught staying on the string, using a full bow. Again, maintaining the curve, arm

weight and freedom are critical. The other crucial point is that the bow generates an enormous sound without any muscle pressure. The string should almost "over-spin" so the pitch may sound slightly higher when the bow reaches its maximum velocity and weight at the bottom of the pendulum, but sound quality is never forced or raucous. Gradually, the stroke is reduced in size and the pendulum motion becomes smaller.

As the stroke becomes progressively smaller, that pendulum motion is transferred into the part of the arm responsible for generating the stroke — first the upper arm (bicep/tricep), then the elbow and forearm, finally into the hand and fingers. Again, it is important to ensure that the curve, arm weight and depth of sound are still there. It is also important to listen for the releases in the stroke so the notes are still resonant, even with the bow remaining on the string. After making the stroke as small as possible, it is possible to reverse the process so the curve goes from small to large. This stroke is ideal for passages such as Example 2b, which was discussed in Section 4.3. This entire procedure can be repeated with the bow coming off of the string at the end of each swing — this is a very effective approach to learning a spiccato stroke on the viola

Bow Hold

As discussed in Section 3.1, the viola bow hold should be firm and flexible on the stick, yet they are not active. Generally, they do not initiate any bow motion on their own but rather react to the pull of the bow arm and the friction of bow against string. This concept can be demonstrated and learned by supporting the bow with the left hand and holding the stick firmly in the middle with the right hand. Down bows and up bows can be simulated horizontally with the elbow leading the push of the up bow and the pull of the down bow. If the hand is holding the stick and frog with appropriate firmness, the hand should not slide up and down the stick but should remain in position. If the fingers are flexible enough, they will extend or contract in response to the pushing or pulling motion of the elbow (Figure 7).

Figure 7 – Neutral bow hold (above), down bow resistance (right), up bow resistance (below)

Once this balance of firmness and flexibility is achieved, the same motion can be moved onto the instrument, where again the bow is kept from moving by the left hand. Finally, the bow can be released at which point the student must become cognizant of the friction between the bow and string. By being aware of this friction or resistance, the student will not be able to squeeze the bow hold too hard and will instead maintain appropriate firmness and flexibility in the hand.

APPENDIX 3

FURTHER APPLICATIONS FROM THE MOZART SINFONIA CONCERTANTE

3.1 Fast Bow Strokes I: Examples of passages in which similar adjustments are necessary include:

1st movement
Violin: mm. 125-129, 143-149, 176-179, cadenza 18-21
Viola: mm. 129-133, 143-149, 189-191, cadenza 18-21

The same principles of adjustment also apply to detaché strokes such as at the beginning of the first movement cadenza.

2nd movement
Violin: mm. 85-90, 112-114
Viola: mm. 86-90, 113-114, cadenza 12-15

3rd movement
Violin: mm. 80-94, 136-164, 204-206, 382-389, 448-451
Viola: mm. 86-110, 140-167, 204-206, 390-398, 436-439

The principle of starting the attack from the string is also critical for playing chords such as those found in mm.120-121.

3.2 Fast Bow Strokes II: Examples of passages in which similar adjustments are necessary include:

1st movement
Violin: mm. 133-138, 154-155, 194-201, 210-216, 301-306
Viola: mm. 138-142, 154-157, 195-201, 211-217, 306-310

3rd movement
Violin: mm. 116-134, 168-179, 444-447
Viola: mm. 124-136, 168-179, 432-435

APPENDIX 4

DOCTORAL THESIS RECITALS

Chamber Music Recital
December 4, 2003, Convocation Hall

Duo in Bb Major, KV 424 (1783) Adagio, Andante cantabile Andante cantabile Thema con variazioni	Wolfgang Amadeus Mozart (1756-1791)
Three Madrigals for Violin and Viola (1948) Poco Allegro Poco Andante Allegro	Bohuslav Martinu (1890-1959)
Passacaglia (1894)	Handel-Halvorsen
Serenade, op. 10 (1902) Marcia Romanza Scherzo Thema con variazioni Rondo	Ernst von Dohnanyi (1877-1960)

Alycia Au, violin; Aaron Au, viola; Byron Beswick, cello

Solo Recital
January 27, 2004, Convocation Hall

Märchenbilder, op. 113 (1851) Nicht Schnell Lebhaft Rasch Langsam, mit melancholischem Ausdruck	Robert Schumann (1810-1856)
Sonata in A Minor, D. 821 "Arpegionne" (1824) Allegro moderato Adagio Rondo	Franz Schubert (1797-1828)
Sonata for Viola and Piano (1919) Impetuoso Vivace Adagio/Allegro	Rebecca Clarke (1886-1979)
Andante and Rondo Ungarese (1809)	Carl Maria von Weber (1786-1826) arr. William Primrose

Aaron Au, viola; Sylvia Shadick-Taylor, piano

Recital
April 2, 2007, Convocation Hall

Sonata in G Minor, BWV 1029 — Johann Sebastian Bach (1685-1750)
Vivace
Adagio
Allegro

Sonata for Solo Viola, op. 25 no. 1 (1922) — Paul Hindemith (1895-1963)
Breit Viertel
Sehr Frisch und straff
Sehr langsam
Rasendes Zeitmass. Wild. Tonschoenheit ist Nebensache.
Langsam, mit viel Ausdruck

Trio for Horn, Violin and Piano in E-flat, op. 40 (1865) — Johannes Brahms (1833-1897)
Andante
Scherzo
Adagio mesto
Finale

Aaron Au, violin/viola; Allene Hackelman, horn; Sarah Ho, piano

Lecture Recital
May 7, 2007, Convocation Hall

Lecture – From Violin to Viola: A Discovery of Sound and Technique

Charles Pilon, violin/viola

Sinfonia Concertante in Eb, KV 364 (1779) — Wolfgang Amadeus Mozart (1756-1791)
Allegro maestoso
Andante
Presto

Virginie Gagné, violin; Aaron Au, viola; Sarah Ho, piano